CALCULUS
Antidifferentiation problems
OLD

0560-1. Find all antiderivatives in x of

$$x^3 - 2x^2 + 6x - 2.$$

OLD

0560-2. Find all antiderivatives in t of

$$\left(\sqrt[3]{t} + 8\sqrt[7]{t}\right) t^2.$$

OLD

0560-3. Find all antiderivatives in t of

$$\frac{\sqrt[3]{t} + 8\sqrt[7]{t}}{\sqrt{t}}.$$

OLD

0560-4. Find all antiderivatives in u of

$$\frac{e^u + \sin u}{3}.$$

OLD

0560-5. Find the unique $f(x)$ such that
OLD

$$f'(x) = -2x^3 - 5x - 8 \quad \text{and} \quad f(0) = 4.$$

0560-6. Find the unique $f(x)$ such that
OLD

$$f'(x) = \frac{3x^2 + 4}{x\sqrt[4]{x}} \quad \text{and} \quad f(1) = 8.$$

0560-7. Find the unique $h(t)$ such that
OLD

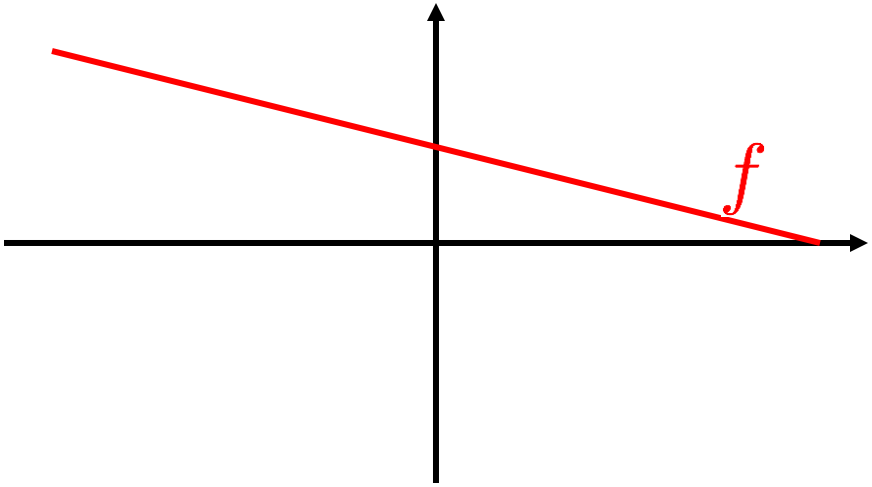
$$h'(t) = 2\sin t - 7\cos t \quad \text{and} \quad h(0) = -5.$$

0560-8. Find the unique $p(t)$ such that
OLD

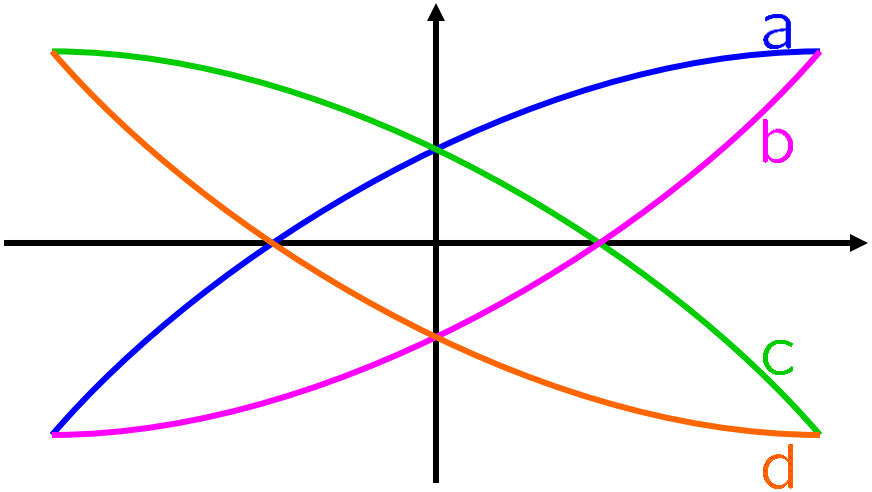
$$p''(t) = e^t + t^3, \quad p'(0) = 7 \quad \text{and} \quad p(0) = 2.$$

OLD

0560-9. The graph of f is shown below.



Which of the following could be the graph of an antiderivative of f?



0560-10. The graph of f is shown below.

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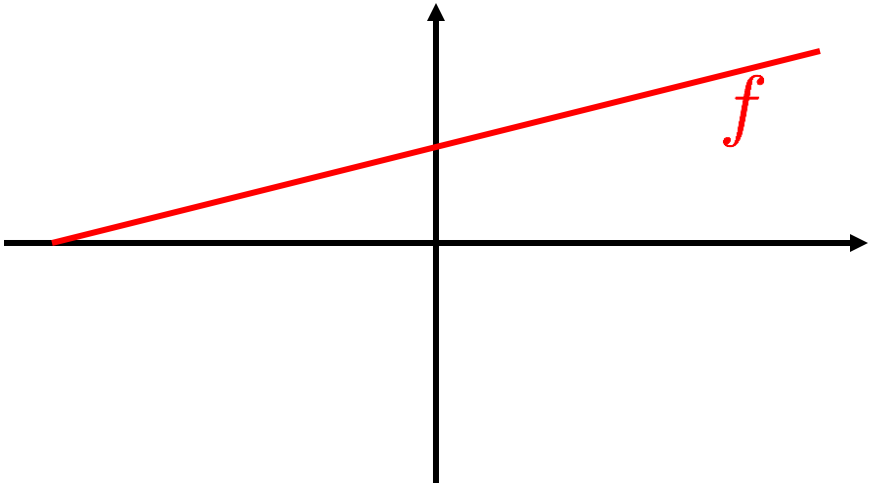
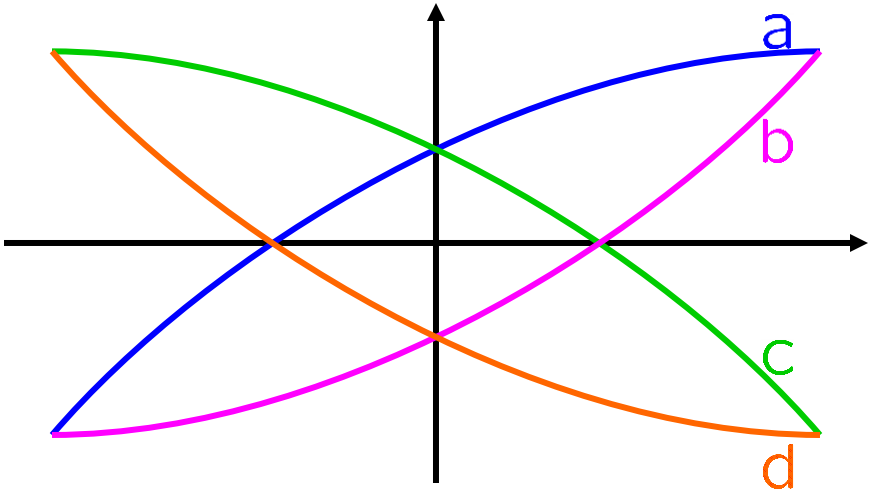
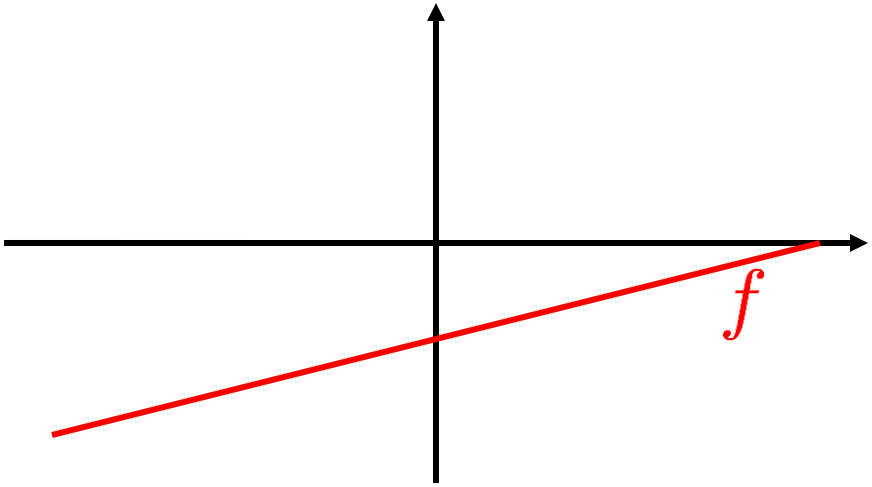


Which of the following could be the graph of an antiderivative of f?

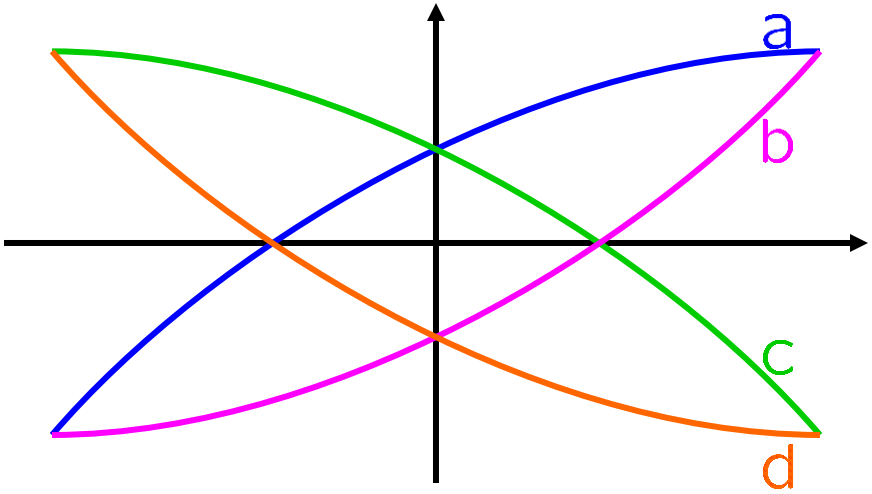


0560-11. The graph of f is shown below.

OLD

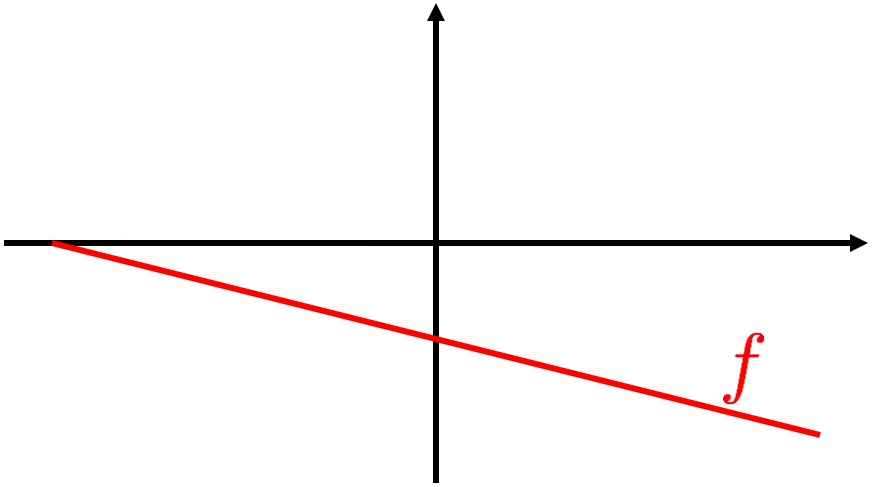


Which of the following could be the graph of an antiderivative of f?

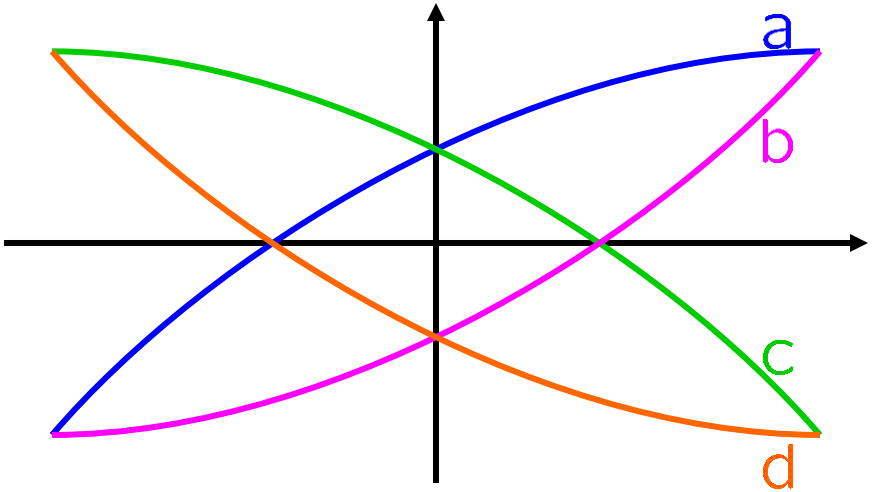


0560-12. The graph of f is shown below.

OLD



Which of the following could be the graph of an antiderivative of f?



0560-13. A particle is travels on a number line.
OLD Suppose
its acceleration at time t is $t^2 + 3t - 6$,
its position at time 0 is 5
and its velocity at time 0 is -2.
Find an expression for its position at time t.

0560-14. We drop a heavy ball out of a window
OLD in a tall building. Its speed at the moment of impact with the ground is 192 feet per second. From what height was it dropped?